

**EPA Superfund
Record of Decision:**

**PINE BEND SANITARY LANDFILL
EPA ID: MND000245795
OU 01
DAKOTA COUNTY, MN
09/30/1991**

SITE NAME AND LOCATION

PINE BEND SANITARY LANDFILL/CROSBY
AMERICAN DEMOLITION LANDFILL SUPERFUND SITE
CITY OF INVER GROVE HEIGHTS, DAKOTA COUNTY, MINNESOTA.

#SBP

STATEMENT OF BASIS AND PURPOSE:

THIS DECISION DOCUMENT PRESENTS THE SELECTED EARLY FINAL REMEDIAL ACTION FOR THE PINE AND SANITARY LANDFILL/CROSBY AMERICAN DEMOLITION LANDFILL SUPERFUND SITE (THE SITE), CITY OF INVER HEIGHTS, DAKOTA, WHICH WAS CHOSEN IN ACCORDANCE WITH THE MINNESOTA ENVIRONMENTAL RESPONSE AND LIABILITY ACT OF 1983 AND THE OCTOBER 23, 1990, RESPONSE ORDER BY CONSENT FOR THE SITE. THE SELECTION AND THE REMEDIAL ACTION TAKES INTO ACCOUNT AND IS NOT INCONSISTENT WITH THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT OF 1980, AS AMENDED BY THE SUPERFUND AMENDMENT AND REAUTHORIZATION ACT OF 1986, AND THE NATIONAL CONTINGENCY PLAN.

THIS DECISION IS USED UPON THE REPORTS AND INFORMATION WHICH CONSTITUTE THE ADMINISTRATIVE RECORD FOR THE SITE. THE ATTACHED INDEX IDENTIFIES THE ITEMS THAT COMPRISE THE ADMINISTRATIVE RECORD UPON WHICH THE SELECTION OF THIS REMEDIAL ACTION IS BASED.

ASSESSMENT OF THE SITE:

ACTUAL OR THREATENED RELEASES OF HAZARDOUS SUBSTANCES FROM THIS SITE, IF NOT ADDRESSED BY IMPLEMENTING THE RESPONSE ACTION IN THIS RECORD OF DECISION, MAY PRESENT IMMINENT AND SUBSTANTIAL ENDANGERMENT TO PUBLIC HEALTH AND WELFARE.

DESCRIPTION OF THE SELECTED REMEDY

THIS OPERABLE UNIT IS THE FIRST OF THREE OPERABLE UNITS FOR THE SITE. IT INVOLVES THE INSTALLATION OF A PERMANENT ALTERNATE WATER SUPPLY. THE SECOND OPERABLE UNIT INVOLVES SOURCE CONTROL FOR THE SITE. THE THIRD OPERABLE UNIT WILL ADDRESS THE CONTAMINATION THAT IS PRESENT IN THE GROUND WATER. THE COMBINATION OF THESE THREE DISCRETE ACTIONS ARE EXPECTED TO ADDRESS THE RELEASES AND THREATENED RELEASES AT THE SITE. THIS RECORD OF DECISION WILL IDENTIFY THE SELECTED REMEDY FOR THE FIRST OPERABLE UNIT ONLY. THE SECOND AND THIRD OPERABLE UNITS WILL EACH BE ADDRESSED IN THEIR RESPECTIVE RECORD OF DECISIONS AT A LATER DATE. THE SELECTED REMEDY FOR THE FIRST OPERABLE UNIT CONSISTS OF THE FOLLOWING COMPONENTS:

- THE EXTENSION OF THE EXISTING CITY OF INVER GROVE HEIGHTS MUNICIPAL WATER SUPPLY;
- THE CONNECTION OF IMPACTED OR POTENTIALLY IMPACTED PREMISES TO THE MUNICIPAL WATER SUPPLY;
- THE PERMANENT SEALING OF THE PRIVATE WATER SUPPLY WELLS WHICH PRESENTLY SERVE THE PREMISES THAT WILL BE CONNECTED TO THE MUNICIPAL WATER SUPPLY.

STATUTORY DETERMINATIONS:

THE SELECTED REMEDY IS PROTECTIVE OF PUBLIC HEALTH AND WELFARE, COMPLIES WITH FEDERAL AND STATE REQUIREMENTS THAT ARE LEGALLY APPLICABLE OR RELEVANT AND APPROPRIATE TO THE SCOPE OF THIS EARLY FINAL REMEDIAL ACTION, AND IS COST-EFFECTIVE. THE STATUTORY PREFERENCE FOR PERMANENT TREATMENT SOLUTIONS THAT REDUCE TOXICITY, MOBILITY, OR VOLUME IS NOT APPLICABLE TO THIS PARTICULAR ROD, BUT WILL BE ADDRESSED AS APPROPRIATE IN SUBSEQUENT DECISION DOCUMENTS FOR THE SITE. THE REMEDY IS NOT PROTECTIVE OF THE ENVIRONMENT BUT NEITHER IS IT DETRIMENTAL. BECAUSE THIS IS AN EARLY ACTION ROD, REVIEW OF THE SITE AND OF THIS REMEDY WILL BE ONGOING AS

OTHER REMEDIAL ALTERNATIVES ARE DEVELOPED FOR THE SITE.

FEDERAL CONCURRENCE:

THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY BELIEVES THAT ALTERNATIVE 2 - EXTENSION OF THE EXISTING CITY OF INVER GROVE HEIGHTS MUNICIPAL WATER SUPPLY - PRESENTS THE BEST BALANCE AMONG THE NINE EVALUATION CRITERIA.

CHARLES WILLIAMS
COMMISSIONER
MINNESOTA POLLUTION CONTROL AGENCY

DATE: 09/30/91

RECORD OF DECISION SUMMARY

#SNLD

I. SITE NAME, LOCATION AND DESCRIPTION

THE PINE BEND SANITARY LANDFILL/CROSBY AMERICAN DEMOLITION LANDFILL (PBSL/CADL) SITE IS LOCATED IN NORTHEAST DAKOTA COUNTY, ON THE PERIPHERY OF THE MINNEAPOLIS/ST. PAUL METROPOLITAN AREA, IN SECTIONS 27, 28 AND 33, TOWNSHIP 27 NORTH, RANGE 22 WEST, CITY OF INTER GROVE HEIGHTS, MINNESOTA (ATTACHMENT 1). PBSL ENCOMPASSES APPROXIMATELY 255 ACRES AND IS AN OPEN OPERATING MIXED MUNICIPAL SOLID WASTE FACILITY. CADL ENCOMPASSES APPROXIMATELY 52 ACRES AND CEASED ACCEPTING WASTE IN 1989 AND IS INACTIVE. CADL IS LOCATED IMMEDIATELY NORTH OF THE PBSL (ATTACHMENT 2). THE PBSL AND CADL WERE OPERATED AS SEPARATE FACILITIES UNDER SEPARATE OWNERSHIP. CADL AND PBSL ARE CONNECTED HYDROGEOLOGICALLY IN THE SURFICIAL AQUIFER, WITH CADL BEING IMMEDIATELY DOWN AND SIDE GRADIENT OF PBSL, AND PBSL BEING SIDE GRADIENT OF CADL.

THE PBSL/CAP SITE IS INCLUDED ON THE MINNESOTA PERMANENT LIST OF PRIORITIES WITH A HAZARD RANKING SYSTEM SCORE OF 52. PBSL, ONLY, IS INCLUDED ON THE NATIONAL PRIORITY LIST (NPL) WITH A HAZARD RANKING SYSTEM SCORE OF 52. THE MINNESOTA POLLUTION CONTROL AGENCY (MPCA) HAS ALWAYS CONSIDERED THE TWO LANDFILLS AS ONE SITE BECAUSE HYDROGEOLOGIC DATA DEMONSTRATES THAT THE GROUND WATER CONTAMINATION PLUMES EMANATING FROM EACH LANDFILL COMMINGLED ON AND EAST OF THEIR COMMON BORDER. THE MPCA CONSIDERS THE RESPONSIBLE PERSONS FOR BOTH LAND FILLS JOINTLY AND SEVERALLY LIABLE FOR THE COMMINGLED GROUNDWATER CONTAMINATION HYDROGEOLOGICALLY DOWN AND SIDEGRADIENT OF THE PBSL/CADL SITE.

THE PBSL/CADL SITE (THE SITE) IS BORDERED ON THE SOUTH BY INDUSTRIAL AREAS, TO THE EAST BY RESIDENTIAL AND INDUSTRIAL AREAS, TO THE NORTH BY RESIDENTIAL AREAS, AND TO THE WEST BY PASTURE AND RESIDENTIAL AREAS. THE TERRAIN IS GENERALLY FLAT TO GENTLY ROLLING AND POSSESSES AN IMMATURE NATURAL SURFACE DRAINAGE SYSTEM RESULTING IN NUMEROUS PONDS AND WETLANDS. THE MISSISSIPPI RIVER IS LOCATED APPROXIMATELY ONE MILE TO THE EAST OF THE SITE.

THE GEOLOGY OF THE AREA IN THE VICINITY OF THE SITE CONSISTS OF A THICK SEQUENCE OF GLACIAL DRIFT OVERLYING APPROXIMATELY 700 FEET OF CAMBRIAN BEDROCK. THE BEDROCK IS GENERALLY FLAT LYING BUT HAS BEEN DEEPLY ERODED IN SOME AREAS AND SUBSEQUENTLY FILLED WITH GLACIAL DRIFT. THE AXIS OF A PRONOUNCED BURIED BEDROCK VALLEY TRENDS WEST-NORTHWEST TO EAST-SOUTHEAST NEAR THE NORTHEASTERN CORNER OF THE SITE. THE VALLEY IS NEARLY TWO MILES WIDE AND 450 FEET OR MORE DEEP IN PLACES, ALTHOUGH THERE IS NO SURFACE INDICATION OF ITS PRESENCE. THE GRADIENT FLOW OF SURFICIAL GROUND WATER, SUPPORTED BY EXTENSIVE HYDROGEOLOGICAL DATA, IS FOUND TO BE EAST-NORTHEAST RUNNING FROM SOUTH OF PBSL, THROUGH PBSL, CONTINUING IN A NORTHEASTERLY DIRECTION THROUGH CADL, THEN EAST ALONG THE BURIED BEDROCK VALLEY TO THE MISSISSIPPI RIVER (ATTACHMENT 3). THE GROUNDWATER CONTAMINATION PLUME EMANATING FROM THE SITE IS MOVING THROUGH THE SURFICIAL AQUIFER IN THIS AREA AND IT IS BELIEVED THAT IT WILL EVENTUALLY DISCHARGE TO THE MISSISSIPPI RIVER VIA SPRINGS IN THE RIVER BOTTOM.

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II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

THE PBSL WAS FIRST ISSUED A PERMIT (SW-45) TO OPERATE BY THE MPCA ON SEPTEMBER 7, 1971. SINCE THEN, IT HAS OPERATED AS A SANITARY LANDFILL ACCEPTING MIXED MUNICIPAL SOLID WASTE (MMSW) AND NONHAZARDOUS INDUSTRIAL WASTE.

THE CADL WAS FIRST ISSUED A PERMIT (SW-16) TO OPERATE BY THE MPCA ON SEPTEMBER 17, 1970. FROM JANUARY 1971 THROUGH JUNE 1974, CADL ACCEPTED COMPRESSED BALES OF MMSW. IN 1976, CADL BEGAN OPERATING AS A DEMOLITION WASTE LANDFILL, ACCEPTING ONLY WASTE ASSOCIATED WITH DEMOLISHED STRUCTURES. APPROXIMATELY 35 PERCENT BY VOLUME OF THE 40 ACRES FOR THE CADL CONTAINS BALED MMSW.

VOLATILE ORGANIC COMPOUNDS (VOCs) WERE FIRST DETECTED IN THE SURFICIAL GROUND WATER BENEATH THE SITE IN 1983. SINCE THAT TIME, 31 DIFFERENT VOCs (ATTACHMENT 4) HAVE BEEN FOUND WITHIN

THE GROUNDWATER MONITORING NETWORK (ATTACHMENT 5). DOWNGRAIENT PRIVATE WATER SUPPLY WELLS CONSIST OF TWO TYPES, WELLS SCREENED IN THE SURFICIAL AQUIFER (17 WELLS), AND WELLS SCREENED IN THE DEEP BEDROCK AQUIFERS (4 WELLS). THE BEDROCK WELLS SERVE THE CENEX FACILITY, PABST MEAT SUPPLY COMPANY, THE UNION CARBIDE FACILITY, AND THE NSP FACILITY (NSP-D).

AVAILABLE INFORMATION INDICATES THAT A MAJORITY OF THE DOWNGRAIENT WELLS ARE SCREENED IN THE SURFICIAL AQUIFER WHICH RANGES FROM 100 TO 300 FEET IN DEPTH. ANALYSIS OF GROUND WATER SAMPLES FROM NINETEEN DOWNGRAIENT PRIVATE WELLS HAVE SHOWN DETECTABLE CONCENTRATIONS OF VOCs IN EIGHT OF THE WELLS AT THE PRESENT TIME. THE MINNESOTA DEPARTMENT OF HEALTH (MDH) HAS RECOMMENDED THAT TWO PRIVATE WELLS (CARDIN AND A. SACHWITZ) SHOULD NOT BE USED AS A POTABLE WATER SUPPLY. ELEVEN PRIVATE WELL OWNERS ARE PRESENTLY USING BOTTLED WATER PAID FOR BY THE PBSL. THE MDH ISSUED A WELL DRILLING ADVISORY IN 1985 FOR AN AREA EAST AND WEST OF THE PBSL WHICH RECOMMENDS THAT NO NEW WELLS BE CONSTRUCTED IN THE AREA (ATTACHMENT 6). THE MPCA HAS REQUESTED THE MDH TO CONSIDER MODIFYING THE WELL DRILLING ADVISORY AREA (ATTACHMENT 7) TO REFLECT, GIVEN MORE INFORMATION, THE AREA IMPACTED OR POTENTIALLY IMPACTED BY THE CONTAMINATION PLUME.

ENFORCEMENT HISTORY

PINE BEND LANDFILL, INC. (PBLI), A WHOLLY-OWNED SUBSIDIARY OF BROWNING FERRIS. INDUSTRIES, IS THE OWNER AND PERMITTEE OF THE PBSL. CROSBY AMERICAN PROPERTIES, INC, (CAPI), A WHOLLY-OWNED SUBSIDIARY OF AMDURA CORPORATION, IS THE OWNER AND PERMITTEE OF THE CADL SITE.

IN APRIL, 1985, UNDER THE MINNESOTA ENVIRONMENTAL RESPONSE AND LIABILITY ACT (MERLA), PINE BEND LANDFILL, INC. ENTERED INTO A RESPONSE ORDER BY CONSENT (CONSENT ORDER) WITH THE MPCA TO CARRY OUT A REMEDIAL INVESTIGATION (RI), FEASIBILITY STUDY (FS) AND RESPONSE ACTION (RA). THE CONSENT ORDER WAS AMENDED ON OCTOBER 23, 1990. PURSUANT TO THAT CONSENT ORDER, PBLI HAS, AMONG OTHER THINGS CONDUCTED AN RI (1986), CONDUCTED ADDITIONAL RI ACTIVITIES (1987), CONDUCTED A PUMP TEST (1989-90), SUBMITTED A PRELIMINARY ALTERNATIVES REPORT (1989), UNDERTAKEN AN INTERIM GROUNDWATER MONITORING PROGRAM (1985-90) AND SUBMITTED AN MPCA APPROVED FINAL RI REPORT IN AUGUST, 1991. PBLI HAS ALSO TAKEN OR WILL UNDERTAKE VARIOUS ENVIRONMENTAL IMPROVEMENTS AT PBSL AS REQUIRED BY ITS MPCA OPERATING PERMIT INCLUDING: PLACEMENT OF FINAL COVER ON PORTIONS OF THE LANDFILL THAT ARE FILLED TO FINAL ELEVATION, INSTALLATION OF A COMBUSTIBLE GAS COLLECTION SYSTEM, INSTALLATION OF A CLAY LINER AND LEACHATE COLLECTION SYSTEM IN AN EXPANSION AREA, AND THE INSTALLATION OF A SURFACE DRAINAGE CONTROL SYSTEM. IN ADDITION, PBLI HAS PROVIDED BOTTLED WATER FROM APPROXIMATELY 1986 UNTIL THE PRESENT TO A NUMBER OF NEARBY RESIDENTS DUE TO ACTUAL OR POTENTIAL DRINKING WATER CONTAMINATION.

IN APRIL, 1985, UNDER MERLA, CAPI AND THE MPCA ENTERED INTO A CONSENT ORDER TO CARRY OUT RI, FS AND RA ACTIVITIES. THE CONSENT ORDER WAS AMENDED ON NOVEMBER 25, 1986. PURSUANT TO THE CONSENT ORDER, CAPI HAS SUBMITTED A DRAFT RI/FS REPORT, HAS EXPANDED ITS ORIGINAL GROUND WATER MONITORING NETWORK, AND HAS SUBMITTED A REVISED GROUND WATER SAMPLING PLAN. ON APRIL 12, 1990, CAPI'S PARENT COMPANY, AMDURA CORPORATION, FILED FOR PROTECTION UNDER CHAPTER 11 OF THE BANKRUPTCY CODE. DUE TO THE BANKRUPTCY PROCEEDINGS, CAPI CLAIMED IT COULD NOT CARRY OUT THE TERMS OF ITS CONSENT ORDER AND SUSPENDED ALL ACTIVITIES AT THE CADL SITE.

ON AUGUST 28, 1990 THE MACA ISSUED TO CAPI A DETERMINATION THAT ACTIONS WILL NOT BE TAKEN IN THE MANNER AND TIME REQUESTED TO CAPI FOR FAILING TO CARRY OUT THE TERMS OF ITS 1985 CONSENT ORDER. THE MPCA IS PRESENTLY EXPENDING STATE SUPERFUND MONIES AT THE SITE TO CARRY OUT WORK NOT BEING PERFORMED BY CAPI.

A POTENTIAL RESPONSIBLE PARTY (PRP) INVESTIGATION IS BEING CONDUCTED BY THE MPCA FOR THE CADL. CLAIMS HAVE BEEN MADE FOR COSTS INCURRED AT THE CADL PORTION OF THE SITE BY THE STATE OF MINNESOTA IN THE BANKRUPTCY PROCEEDINGS OF AMDURA CORPORATION. BROWNING FERRIS INDUSTRIES HAS GUARANTEED THE PERFORMANCE OF PBLI UNDER ITS RESPONSE ORDER BY CONSENT.

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III. HIGHLIGHTS OF COMMUNITY PARTICIPATION

THE SUPERFUND ACTIVITIES AT THE SITE HAVE BEEN FOLLOWED CLOSELY BY THE LOCAL COMMUNITY AND PRESS. TO DATE, THERE HAVE BEEN PUBLIC MEETINGS, FACT SHEETS, UPDATE LETTERS AND PRESS RELEASES REGARDING THE ACTIVITIES AT THE SITE. THERE IS AN ACTIVE MAILING LIST OF LOCAL CITIZENS INTERESTED IN THE ACTIVITIES AT THE SITE. A CHRONOLOGY OF PAST COMMUNITY RELATIONS ACTIVITIES AT THE SITE IS LISTED IN THE RESPONSIVENESS SUMMARY (ATTACHMENT 8).

A PUBLIC INFORMATION REPOSITORY HAS BEEN ESTABLISHED IN THE WESCOTT BRANCH LIBRARY, OF THE DAKOTA COUNTY LIBRARY SYSTEM, IN THE NEIGHBORING CITY OF EAGAN, MINNESOTA. THIS IS THE CLOSEST PUBLIC LIBRARY TO THE SITE. THE ADMINISTRATIVE RECORD FOR THE SITE IS LOCATED AT THE MAIN OFFICE OF THE MPCA IN ST. PAUL, MINNESOTA.

NOTICE OF AVAILABILITY FOR THE PROPOSED PLAN FOR THIS OPERABLE UNIT WAS PUBLISHED IN THE SUN CURRENT (INVER GROVE HEIGHTS EDITION) NEWSPAPER IN THE FORM OF A DISPLAY AD ON MAY 1, 1991. THIS AD INITIATED A 30-DAY PUBLIC COMMENT PERIOD. THE PUBLIC COMMENT PERIOD IS CONSISTENT WITH CERCLA, SECTION 117(A). NOTICE OF THE PUBLIC MEETING HELD ON MAY 15, 1991, WAS INCLUDED. ADDITIONALLY, A NEWS RELEASE PROVIDING NOTIFICATION OF THE PROPOSED REMEDY AND PUBLIC MEETING HELD WAS SENT TO INTERESTED PARTIES AND THE PRESS.

A PUBLIC MEETING WAS HELD ON MAY 15, 1991, WHERE THE MPCA PRESENTED ALTERNATIVES TO A GROUP OF INTERESTED CITIZENS. THE RESPONSIVENESS SUMMARY (ATTACHMENT 8) ADDRESSES SPECIFIC COMMENTS RAISED AT THE MAY 15TH PUBLIC MEETING AND DURING THE PUBLIC COMMENT PERIOD. THE PUBLIC COMMENT PERIOD OFFICIALLY ENDED MAY 30, 1991. NO FORMAL REQUEST FOR AN EXTENSION OF THE PUBLIC COMMENT PERIOD WAS RECEIVED BY THE MPCA. HOWEVER, DUE TO THE LOW TURNOUT BY THE RESIDENTS RESIDING IN THE IMPACTED OR POTENTIALLY IMPACTED AREA, A QUESTIONNAIRE WAS SENT TO THOSE PEOPLE, AND, THEREFORE, THE COMMENT PERIOD WAS INFORMALLY EXTENDED.

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IV. SCOPE AND ROLE OF OPERABLE UNIT

THE ACTIVITIES AT THE SITE HAVE BEEN DIVIDED INTO THREE OPERABLE UNITS (OUS) AS FOLLOWS:

- OU 1: PERMANENT ALTERNATE WATER SUPPLY
- OU 2: SOURCE CONTROL
- OU 3: GROUND WATER CONTAMINATION

OU 1, WHICH IS ADDRESSED IN THIS ROD, WILL PROVIDE FOR THE EXTENSION OF THE EXISTING CITY OF INVER GROVE HEIGHTS MUNICIPAL WATER SUPPLY INTO THE IMPACTED AREA EAST OF THE SITE IN ORDER TO ELIMINATE EXPOSURE PATHWAYS AS DISCUSSED BELOW IN SECTION VI.

OU 2, WILL ADDRESS SOURCE CONTROL THAT WILL PREVENT OR MINIMIZE THE CONTAMINATION CONTAMINATED IN THE BURIED WASTE FROM MIGRATING INTO THE GROUND WATER BENEATH THE SITE. THIS OU IS CURRENTLY IN THE FEASIBILITY STUDY PHASE WHICH IS EXPECTED TO BE COMPLETED BY DECEMBER, 1991.

OU 3, WILL ADDRESS THE CONTAMINATION THAT HAS MOVED INTO THE GROUND WATER AND IS TRAVELING OFF THE SITE. THE OBJECTIVE WILL BE TO PREVENT CONTAMINATION FROM MIGRATING FURTHER AND RESTORE GROUND WATER QUALIFY IN THE PLUME AREA. THIS OU IS CURRENTLY IN THE FEASIBILITY STUDY PHASE WHICH IS EXPECTED TO BE COMPLETED BY DECEMBER, 1991.

THE COMBINATION OF THESE THREE DISCRETE ACTIONS IS INTENDED TO ADDRESS THE RELEASES AND THREATENED RELEASES AT AND FROM THE SITE.

THE PRIMARY OBJECTIVE OF OU 1 IS TO ELIMINATE POSSIBLE HUMAN EXPOSURE TO CONTAMINANTS FROM THE SITE, PRIMARILY VOCs, BY INTERRUPTING THE CURRENT EXPOSURE PATHWAY THAT DERIVES FROM USE OF COMMERCIAL AND RESIDENTIAL WATER SUPPLY WELLS DOWNGRADIENT OF THE SITE.

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V. SITE CHARACTERIZATION

THE PROBLEM OF PRIMARY CONCERN IS THE VOC CONTAMINATION IN GROUND WATER DUE TO LEACHATE MIGRATING FROM THE SITE. THE SITE IS THE ONLY KNOWN SOURCE OF THE CONTAMINATION OF GROUND WATER IN THE IMPACTED AREA EAST OF THE SITE.

GROUND WATER WAS THE ONLY MEDIUM FOUND TO BE CONTAMINATED OFF-SITE THAT COULD BE ATTRIBUTABLE TO THE SITE. WITH THE EXCEPTION OF BENZENE AND THE CHLORINATED FLUOROMETHANES, ALL OF THESE SUBSTANCES IDENTIFIED MAY BE RELATED TO THE TRANSFORMATION OF CERTAIN CHEMICALS TO VINYL CHLORIDE THROUGH BOTH CHEMICAL AND BIOLOGICAL PROCESSES. THESE SUBSTANCES ARE FOUND AT LOCATIONS BOTH OUTSIDE AND WITHIN THE BOUNDARIES OF THE SITE. THE GROUNDWATER CONTAMINATION IS MOST LIKELY THE RESULT OF PRECIPITATION INFILTRATING THROUGH THE PERMEABLE LANDFILL COVER MATERIAL AND COMING IN CONTACT WITH THE BURIED WASTE. SPECIFIC COMPOUNDS MAY ALSO RESULT FROM THE DEGRADATION OF WASTE PRODUCTS. THE COMPOUNDS OF CONCERN CAN CLASSIFIED AS TO CARCINOGENICITY (THE LIKELIHOOD THAT THEY MAY CAUSE CANCER IN HUMANS). A "GROUP A COMPOUND" MEANS THAT SUFFICIENT INFORMATION EXISTS TO CLASSIFY IT AS A HUMAN CARCINOGEN. "GROUP B COMPOUNDS" ARE CLASSIFIED AS PROBABLE HUMAN CARCINOGENS BECAUSE SUFFICIENT EPIDEMIOLOGICAL EVIDENCE DOES NOT EXIST, BUT THERE IS SUFFICIENT EVIDENCE FROM ANIMAL STUDIES TO SUPPORT THE CLASSIFICATION OF "PROBABLE" HUMAN CARCINOGEN. "GROUP D COMPOUNDS" ARE NOT CLASSIFIABLE AS TO HUMAN CARCINOGENICITY. THE CLASSES OF THE COMPOUNDS OF CONCERN ARE AS FOLLOWS:

CHEMICAL	ORAL GROUP	INHALATION GROUP
BENZENE	A	A
1,1 DICHLOROETHANE	C	C
1,1 DICHLOROETHYLENE	C	C
1,2 DICHLOROPROPANE	B	B
METHYLENE CHLORIDE	B	B
TETRACHLOROETHYLENE	B	B
TRICHLOROETHYLENE	B	B
VINYL CHLORIDE	A	A

ALL OTHER VOC CONTAMINANTS THAT HAVE BEEN FOUND IN ON AND OFF SITE WELLS ARE CLASSIFIED AS GROUP D COMPOUNDS.

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VI. SUMMARY OF SITE RISKS

THE FORMAL HUMAN HEALTH AND ECOLOGICAL RISK ASSESSMENTS FOR THE SITE HAVE NOT BEEN COMPLETED AS OF THE WRITING OF THIS ROD. THE MDH PUBLISHED A PRELIMINARY HEALTH ASSESSMENT FOR THE PBSL IN JUNE, 1989. THE ASSESSMENT IS BASED ON GROUND WATER QUALITY DATA PRODUCED BETWEEN FEBRUARY, 1986 THROUGH JULY, 1987. THE FINAL HEALTH ASSESSMENT IS BEING DRAFTED BY THE MDH AT THE PRESENT TIME. SAMPLING AND ANALYSIS OF GROUNDWATER FROM MONITORING WELLS AND DOWNGRAIDENT RESIDENTIAL AND COMMERCIAL WELLS HAS OCCURRED SINCE 1983 AND CONTINUES TODAY. THE MONITORING WELL, RESIDENTIAL AND COMMERCIAL GROUND WATER MONITORING NETWORK HAS EXPANDED DURING THIS PERIOD OF TIME TO THE EAST AND NORTHEAST OF THE SITE TO TRACK THE MIGRATING CONTAMINATION PLUME. THE PLUME IS MOVING IN AN EAST - NORTHEASTERLY DIRECTION TOWARDS THE MISSISSIPPI RIVER, APPROXIMATELY ONE MILE TO THE EAST. ON-SITE MONITORING WELLS SHOW LEVELS OF VOCs IN EXCESS OF THE RECOMMENDED ALLOWABLE LIMITS (RALS) AND THE MAXIMUM CONTAMINANT LEVELS (MCLS). THE RALS AND MCLS ARE CONCENTRATION LIMITS ESTABLISHED BY THE MDH FEDERAL GOVERNMENT, RESPECTIVELY, FOR CERTAIN SUBSTANCES IN DRINKING WATER. THERE IS A RISK OF CONTAMINATION OF RESIDENTIAL WELLS BY THESE COMPOUNDS AS THEY MIGRATE TOWARDS THOSE WELLS.

SIX DOWNGRAIDENT RESIDENTIAL AND TWO DOWNGRAIDENT COMMERCIAL WELLS HAVE CONSISTENTLY SHOWN DETECTABLE CONCENTRATIONS OF VOCs OVER SEVERAL SAMPLING EVENTS. NONE OF THE WELLS HAVE YET TO SHOW VOC CONCENTRATIONS ABOVE THE RALS OR THE MCLS FOR THE INDIVIDUAL COMPOUNDS ANALYZED.

THE MDH ISSUED TWO WELL ADVISORIES (CARDIN AND A. SACHWITZ), WHICH ADVISE THE WELL OWNER TO SEEK AN ALTERNATIVE SOURCE OF WATER FOR DRINKING AND COOKING, BECAUSE SAMPLING OF THESE WELLS OVER SEVERAL YEARS CONSISTENTLY DETECTED FOUR OR MORE VOCs IN THE WELLS. THE MDH REFERS TO THIS SITUATION AS "MULTIPLE CONTAMINANT EXPOSURE". THESE TWO WELLS HAVE HAD DETECTABLE AND ELEVATED CONCENTRATIONS OF THE FOLLOWING COMPOUNDS:

1,1 TRICHLOROETHANE
CIS-1,2 DICHLOROETHYLENE
1,1 DICHLOROETHANE
1,2 DICHLOROTHANE
CHLOROFORM
TOLUENE
CHLORINATED FLUOROMETHANES (FREONS)
ETHYL ETHER

CONCENTRATIONS OF THE FREONS IN THESE WELLS WERE FOUND TO BE INCREASING WITH TIME BUT ARE PRESENTLY BELOW RALS FOR THOSE COMPOUNDS. THE PRESENCE AND CONCENTRATIONS OF THE OTHER COMPOUNDS HAVE FLUCTUATED OVER TIME. THE HEALTH CONCERN FROM CONTAMINANT EXPOSURE TO EVEN LOW LEVELS OF THESE TYPES OF COMPOUNDS STEMS IN LARGE PART FROM THE LACK OF SCIENTIFIC DATA REGARDING THE ADDITIVE, OR SYNERGISTIC EFFECTS OF SEVERAL COMPOUNDS BEING INGESTED AT THE SAME TIME. IN ADDITION, 1,2-DICHLOROETHANE AND CHLOROFORM ARE CLASSIFIED AS "PROBABLE" HUMAN CARCINOGENS. THE US EPA HAS DETERMINED THAT THERE IS NO SAFE THRESHOLD FOR EXPOSURE TO CARCINOGENS.

THE OTHER FOUR RESIDENTIAL WELLS HAVE SHOWN DETECTABLE CONCENTRATIONS OF VOCs, BUT HAVE NOT SHOWN CONCENTRATIONS IN EXCESS OF RALS OR IN QUANTITIES EXCEEDING, FOUR OR MORE CONTAMINANT DETECTIONS PER SAMPLING EVENT. HYDROGEOLOGICAL DATA FOR THE SITE INDICATES THAT THE REMAINING DOWNGRAIENT PRIVATE WELLS AND THE NSP-S WELL, ALL OF WHICH HAVE NOT SHOWN CONTAMINATION IN THE PAST, HAVE THE POTENTIAL TO BECOME CONTAMINATED BECAUSE THERE IS STRONG INDICATION THAT THEY ARE IN THE PATH OF THE PLUME. ALL OF THE OWNERS OF THE RESIDENTIAL WELLS EXCEPT THE PINE BEND MOTEL ARE BEING PROVIDED BOTTLED WATER PAID FOR BY PBLI.

TWO DOWNGRAIENT COMMERCIAL WELLS, PABST MEAT AND CENEX (ATTACHMENT 5) HAVE SHOWN DETECTABLE CONCENTRATIONS OF VOC CONTAMINATION CONSISTENTLY OVER SEVERAL SAMPLING EVENTS. THE COMPOUNDS APPEARING IN THESE WELLS ARE AS FOLLOWS:

CENEX

TRICHLOROFLUOROMETHANE
DICHLOROFLUOROMETHANE
DICHLORODIFLUOROMETHANE

PABST MEAT SUPPLY CO.

DICHLORODIFLUOROMETHANE
METHYLENE CHLORIDE
1,1 DICHLOROETHANE
DICHLOROFLUOROMETHANE

THESE TWO WELLS ARE DEEP, DOUBLE-CASED, BEDROCK WELLS. CONTAMINATION IS SUSPECTED TO BE MIGRATING DOWN THE SIDE OF THE CASING DUE TO A POOR ANNULUS SEAL OF CEMENT GROUT. THE RI REPORT GIVES NO INDICATION OF THE DIRECT VERTICAL MIGRATION OF COMPOUNDS TO THE BEDROCK AQUIFERS BENEATH OR IN THE VICINITY OF THE SITE. THE TWO WELLS ARE CONSIDERED PUBLIC WATER SUPPLIES, AND, THEREFORE, ARE ANALYZED FOR CONTAMINANTS ANNUALLY BY THE MDH IN ADDITION TO SAMPLING AND ANALYSIS OF THE WELLS BY PBLI'S CONTRACT LABORATORY. DUE TO THEIR STATUS AS A PUBLIC WATER SUPPLY, MAXIMUM CONTAMINANT LEVELS (MCLS) RATHER THAN RALS ARE USED FOR WATER QUALITY CRITERIA. NONE OF THE COMPOUND'S CONCENTRATIONS EXCEED MCLS. THE MDH DOES NOT CONSIDER THE CONSUMPTION OF THE WATER SUPPLIED BY THESE WELLS AS A HUMAN HEALTH RISK. THE UNION CARBIDE WELL AND THE NSP-D WELL ARE ALSO DEEP, DOUBLE-CASED, BEDROCK WELLS. THESE TWO WELLS HAVE NEVER SHOWN CONTAMINATION CONSISTENTLY. THE UNION CARBIDE WELL IS A PUBLIC WATER

SUPPLY WELL, WHILE THE NSP-D WELL IS USED FOR FIRE SUPPRESSION ONLY.

IN SUMMARY, NONE OF THE DOWNGRAIENT RESIDENTIAL WELLS THAT SHOW DETECTABLE CONCENTRATIONS OF VOCS POSSESS CONCENTRATIONS THAT EXCEED RALS AT THE PRESENT TIME. HOWEVER, TWO OF THE WELLS DO SHOW THE PRESENCE OF FOUR OR MORE VOCS, LEVELS OF FREONS APPEAR TO RISING AND MULTIPLE EXPOSURE IS A HEALTH CONCERN. CONTINUED USE OF BOTTLED WATER BY THESE WELL OWNERS WILL MINIMIZE THE RISK FROM INGESTION, HOWEVER, BOTTLED WATER IS NOT A PERMANENT SOLUTION TO THE DRINKING WATER PROBLEM. NONE OF THE DOWNGRAIENT COMMERCIAL WELLS ARE CONSIDERED TO BE AT RISK AT THIS TIME.

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VII. DESCRIPTION OF ALTERNATIVES

FIVE REMEDIAL ACTION ALTERNATIVES HAVE BEEN IDENTIFIED FOR OU 1 AS FOLLOWS:

ALTERNATIVE 1: NO ACTION.

ALTERNATIVE 2: EXTENSION OF THE CITY OF INVER GROVE HEIGHTS EXISTING MUNICIPAL WATER SUPPLY INTO THE IMPACTED AREA.

ALTERNATIVE 3: CONSTRUCTION OF COMMUNITY WATER SUPPLY SYSTEM TO SERVICE THE IMPACTED AREA.

ALTERNATIVE 4: CONSTRUCTION OF A NEW WELL FOR EACH IMPACTED WELL OWNER.

ALTERNATIVE 5: RELOCATING IMPACTED OR POTENTIALLY IMPACTED PRIVATE WELL OWNERS OUTSIDE OF THE IMPACTED AREA THROUGH THE PURCHASE OF THEIR PROPERTY.

ALTERNATIVES 4 AND 5 WILL BE ELIMINATED FROM FURTHER ANALYSIS.

ALTERNATIVE 4 WOULD REQUIRE A WELL TO BE CONSTRUCTED FOR EACH WELL THAT IS IMPACTED OR IS IN THE PATH OF THE CONTAMINATION PLUME. IN 1985, THE MDH ISSUED A WELL DRILLING ADVISORY FOR THE AREA PRESENTLY IMPACTED AND AREAS THAT MAY BE IN THE PATH OF THE PLUME. THE ADVISORY DISCOURAGES WATER WELLS TO BE CONSTRUCTED IN THIS AREA DUE TO THE POTENTIAL FOR PRODUCING A CONTAMINATED WELL OR CONTAMINATING DEEPER GROUND WATER WHEN DRILLING. ALSO, THIS ALTERNATIVE IS NOT CONSIDERED A PERMANENT SOLUTION BECAUSE THE WELLS WOULD NEED TO BE MONITORED INDEFINITELY. THEREFORE, ALTERNATIVE 4 IS NOT CONSIDERED EFFECTIVE OR IMPLEMENTABLE, AND IS LESS PROTECTIVE OF HUMAN HEALTH THAN ALTERNATIVE 2 OR 3.

ALTERNATIVE 5 WOULD BE CONSIDERED ONLY AFTER EXHAUSTING OTHER REMEDIES. IT HAS THE GREATEST DIFFICULTY OF IMPLEMENTATION OF ALL THE OPTIONS, AND THE GREATEST IMPACT ON THE AFFECTED RESIDENTS. AFTER DISCUSSING ALTERNATIVE 5 WITH SEVERAL OF THE RESIDENTS, IT WAS DETERMINED THAT THE MAJORITY OF THEM WOULD NOT WANT TO SELL THEIR PROPERTY AND RELOCATE. FOR THIS REASON, ALTERNATIVE 5 IS NOT CONSIDERED IMPLEMENTABLE OR DESIRABLE.

IN THE SUMMER OF 1990, THE MPCA, THE CITY OF INVER GROVE HEIGHTS, PBLI, DAKOTA COUNTY AND BROWNING FERRIS INDUSTRIES ENTERED INTO DISCUSSIONS CONCERNING THE INSTALLATION OF A PERMANENT ALTERNATE WATER SUPPLY IN THE IMPACTED AREA EAST OF THE SITE. AS A RESULT OF THOSE DISCUSSIONS AND MPCA NEGOTIATIONS WITH PBLI TO AMEND ITS ORIGINAL RESPONSE ORDER BY CONSENT, A FOCUSED FS WAS DONE IN OCTOBER 1990 TO IDENTIFY ALTERNATIVES AND THEIR RESPECTIVE COSTS FOR AN ALTERNATE WATER SYSTEM. THE FOCUSED FS WAS FINANCED BY PBLI. TWO ADDENDUMS TO THE FOCUSED FS WERE COMPLETED IN NOVEMBER, 1990.

ALTERNATIVE 1 - NO ACTION

THE NO ACTION ALTERNATIVE CONSISTS OF THE DOWNGRAIENT RESIDENTIAL WELL OWNERS IN THE IMPACTED AREA CONTINUING TO USE BOTTLED WATER AS THEIR POTABLE WATER SUPPLY. THEIR WELLS WOULD CONTINUE TO BE SAMPLED BY THE RPS OF THE SITE INDEFINITELY. THIS ALTERNATIVE IS NOT PROTECTIVE OF HUMAN HEALTH AND IS NOT AN EFFECTIVE OR ACCEPTABLE PERMANENT REMEDY. THIS ALTERNATIVE WILL NOT BE CONSIDERED OR EVALUATED FURTHER.

ALTERNATIVE 2 - EXTENSION OF MUNICIPAL WATER INTO THE IMPACTED AREA

THE FOCUSED FS ORIGINALLY IDENTIFIED THIS ALTERNATIVE AS A SIX INCH WATER LINE THAT WOULD DEAD-END IN THE IMPACTED AREA AND SERVE ONLY THOSE RESIDENTS AND BUSINESSES IN THE IMPACTED AREA. DURING DISCUSSIONS BETWEEN THE CITY OF INVER GROVE HEIGHTS, THE MPCA, PBLI, AND DAKOTA COUNTY, THE CITY DETERMINED THAT ITS WATER SYSTEM COULD ONLY BE EXTENDED IF IT MET CERTAIN DESIGN REQUIREMENTS. THE CITY WANTED THE SYSTEM EXTENDED IN A WAY THAT WOULD ALLOW OTHER USERS NOT AFFECTED BY THE SITE'S CONTAMINATION, TO CONNECT TO THE EXTENSION. THE CITY ALSO REQUIRED THAT THE SYSTEM HAVE THE CAPACITY TO PROVIDE FIRE PROTECTION (FIRE HYDRANTS AND LARGER WATER MAINS), AND THE SYSTEM NEEDED TO BE LOOPED RATHER THAN A DEAD-END SYSTEM. THE LOOPED SYSTEM WAS NEEDED TO DECREASE THE HOLDING TIME OF THE WATER IN THE SYSTEM, THEREBY, MAINTAINING WATER QUALITY MORE EFFECTIVELY THAN A DEAD-END TYPE OF SYSTEM. THE LAST CONDITION OF THE CITY WAS THAT THE RPS FOR THE SITE WOULD BE REQUIRED TO PAY THE CITY THE DIFFERENCE BETWEEN THE AMOUNT OF MONEY THE CITY WOULD COLLECT THE USER FEES (WATER BILLS) FROM USERS CONNECTED TO THE EXTENSION AND THE ACTUAL COST OF OPERATION AND MAINTENANCE (O&M) OF THE EXTENSION ON AN ANNUAL BASIS.

ADDENDUM 1 TO THE FOCUSED FS STUDIED THE OPTIONS FOR PROVIDING FIRE PROTECTION TO THE AREA. ADDENDUM 2 INVESTIGATED THE FEASIBILITY OF A LOOPED SYSTEM.

ALTERNATIVE 2 WILL INVOLVE THE FOLLOWING: EXTENSION OF MUNICIPAL WATER INTO THE IMPACTED AREA IN A LOOPED SYSTEM FASHION (ATTACHMENT 9). THE SYSTEM WILL CONTAIN A BOOSTER PUMP WHICH WILL AID IN CIRCULATING WATER THROUGH THE LOOPED SYSTEM MORE RAPIDLY THAN WOULD NORMALLY OCCUR, THEREBY, DECREASING THE HOLDING TIME OF THE WATER WITHIN THE LOOP. THIS WILL MAINTAIN WATER QUALITY WITHIN THE LOOPED EXTENSION. THERE WILL BE AMPLE STORAGE CAPABILITIES WHICH ARE ALREADY BUILT IN TO THE EXISTING MUNICIPAL SYSTEM. THE RPS OF THE SITE WILL CONSTRUCT THE EXTENSION, CONNECT THE RESIDENTS' HOMES/BUSINESSES TO THE SYSTEM, PAY THE COST ASSOCIATED WITH RELANDSCAPED LAWNS, ETC., AND PERMANENTLY SEAL THE PRIVATE WELLS THAT WILL BE TAKEN OUT OF SERVICE BY THIS EXTENSION. WATER USE BY THE RESIDENTS/BUSINESSES CONNECTED TO THE SYSTEM WILL BE METERED BY THE CITY. THE ISSUE OF WHETHER WATER BILLS WILL BE THE RESPONSIBILITY OF THE PROPERTY OWNERS OR THE RPS OF THE SITE HAS NOT BEEN RESOLVED. THE CITY WOULD OWN, OPERATE AND MAINTAIN THE EXTENSION. AT THE PRESENT TIME, WATER TREATMENT BY THE CITY CONSISTS OF THE ADDITION OF CHLORINE, FLUORIDE, AND SODIUM SILICATE WHICH PREVENTS THE PRECIPITATION OF MINERALS FROM THE WATER IN THE WATER LINES. THE CITY IS CONSIDERING THE CONSTRUCTION OF A WATER TREATMENT FACILITY WHICH WILL REMOVE THE MAJORITY OF MINERALS FOUND IN THE CITY'S WATER SUPPLY. THE COST OF ALTERNATIVE 2 IS ESTIMATED AS FOLLOWS:

CAPITAL COST:	\$ 2,131,300
ANNUAL O&M:	\$ 30,350
ESTIMATED PRESENT WORTH:	\$ 2,649,499
IMPLEMENTATION TIME:	1 TO 2 YEARS

ESTIMATED PRESENT WORTH WAS CALCULATED USING AN ESTIMATED ANNUAL INFLATION RATE OF 4.1 PERCENT AND A THIRTY YEAR PERIOD OF ANALYSIS.)

ALTERNATIVE 3 - CONSTRUCTION OF A COMMUNITY WATER SUPPLY SYSTEM

THIS ALTERNATIVE WILL CONSIST OF THE CONSTRUCTION OF TWO DOUBLE-CASED, BEDROCK WELLS (ONE FOR A BACKUP), AND A WATER DISTRIBUTION SYSTEM CONSISTING OF A PUMPHOUSE AND WATER MAINS (ATTACHMENT 10). THE WATER PRODUCED BY THE WELLS WILL NOT BE TREATED IN ANY MANNER. THE DISTRIBUTION SYSTEM WILL BE A "DEAD-END SYSTEM" WHICH IS EXPECTED TO CONTRIBUTE TO POOR WATER QUALITY BY INCREASING THE HOLDING TIME OF THE WATER WITHIN THE SYSTEM. THERE WOULD BE LIMITED STORAGE CAPABILITIES. THE RPS OF THE SITE WILL CONSTRUCT THE SYSTEM, CONNECT THE RESIDENTS' HOMES/BUSINESSES TO THE SYSTEM, PAY THE COSTS ASSOCIATED WITH RELANDSCAPED LAWNS, ETC., AND PERMANENTLY SEAL THE PRIVATE WELLS THAT WILL BE TAKEN OUT OF SERVICE BY THIS SYSTEM. THE RPS OF THE SITE WOULD OWN, OPERATE, AND MAINTAIN THE SYSTEM. WATER USE WOULD NOT BE METERED. THERE WOULD BE NO WATER BILLS CHARGED TO THE RESIDENTS/BUSINESSES CONNECTED TO THE SYSTEM. THE COST OF ALTERNATIVE 3 IS ESTIMATED AS FOLLOWS:

CAPITAL COST: \$ 900,500
ANNUAL O&M: \$ 16,539
ESTIMATED PRESENT WORTH: \$1,183,052
IMPLEMENTATION TIME: 1 TO 2 YEARS

(ESTIMATED PRESENT WORTH WAS CALCULATED USING AN ESTIMATED ANNUAL INFLATION RATE OF 4.1 PERCENT AND A THIRTY-YEAR PERIOD OF ANALYSIS.)

#SCA

VIII. SUMMARY OF THE COMPARATIVE ANALYSIS

THE NINE CRITERIA USED FOR EVALUATING THE REMEDIAL ALTERNATIVES LISTED ABOVE INCLUDE: OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT; COMPLIANCE WITH ARARS; LONG-TERM EFFECTIVENESS; REDUCTION IN TOXICITY, MOBILITY, AND VOLUME; SHORT TERM EFFECTIVENESS; IMPLEMENTABILITY; COST; US EPA AND COMMUNITY ACCEPTANCE. THE ADVANTAGES AND DISADVANTAGES OF EACH ALTERNATIVE WERE COMPARED TO IDENTIFY THE ALTERNATIVE PROVIDING THE BEST BALANCE AMONG THE NINE CRITERIA.

OVERALL PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

ALTERNATIVES 2 AND 3 ARE PROTECTIVE OF HUMAN HEALTH BECAUSE THEY EACH PROVIDE A SAFE, PERMANENT, POTABLE WATER SUPPLY TO AFFECTED RESIDENTS AND COMMERCIAL BUSINESSES. THE ALTERNATIVES DO NOT PROTECT THE ENVIRONMENT BUT NEITHER ARE THEY DETRIMENTAL. THE OTHER OUS FOR THE SITE WILL ADDRESS THE RELEASE OF CONTAMINANTS FROM THE SITE AND WILL BE PROTECTIVE OF THE ENVIRONMENT."

COMPLIANCE WITH ARARS.

THE TERM "ARARS" IS DERIVED FROM THE SUPERFUND AMENDMENT AND REAUTHORIZATION ACT OF 1986, WHICH REQUIRES THAT REMEDIAL ACTIONS MEET LEGALLY APPLICABLE OR - RELEVANT AND APPROPRIATE REQUIREMENTS OF OTHER ENVIRONMENTAL LAWS. A "LEGALLY APPLICABLE" REQUIREMENT IS ONE WHICH WOULD LEGALLY APPLY TO THE RESPONSE ACTION IF THAT ACTION WERE NOT TAKEN PURSUANT TO SECTIONS 104, 106 AND 122 OF CERCLA. A "RELEVANT AND APPROPRIATE" REQUIREMENT IS DESIGNED TO APPLY TO PROBLEMS SUFFICIENTLY SIMILAR THAT THE ACTION IS RELEVANT TO THE SITUATION AND APPROPRIATE TO TAKE. THERE ARE THREE CLASSES OF ARARS; CHEMICAL-SPECIFIC; ACTION-SPECIFIC, -AND LOCATION-SPECIFIC. THE MINNESOTA ENVIRONMENTAL RESPONSE AND LIABILITY ACT (MERLA) DEFINES A REMEDIAL ACTION AS A PERMANENT ACTION NEEDED TO PROTECT PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT. IN SELECTING REMEDIAL ACTIONS UNDER MERLA, MPCA TAKES INTO ACCOUNT THE ENVIRONMENTAL REQUIREMENTS THAT APPLY TO A PARTICULAR RELEASE OR THREATENED RELEASE AS WELL AS REQUIREMENTS OR STANDARDS THE STANDARDS THE APPLY TO SUFFICIENTLY SIMILAR CIRCUMSTANCES THAT WOULD BE REASONABLE TO COMPLY WITH IN ORDER TO PROTECT PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT. MPCA REFERS TO THESE REQUIREMENTS AND STANDARDS AS ARARS.

ARARS ARE EXPECTED TO BE MET WITH ALTERNATIVE 2. ARARS WILL BE ASSOCIATED WITH MEETING THE APPLICABLE REQUIREMENTS OF THE SAFE DRINKING WATER STANDARDS, OR MCLS. PRESENTLY, MDH REQUIRES THE SAMPLING AND ANALYSIS OF THE CITY'S WATER SUPPLY SYSTEM FOR BACTERIA A MINIMUM OF 12 TIMES PER YEAR. MDH REQUIRES SAMPLING AND ANALYSIS OF THE CITY'S WATER SYSTEM FOR OTHER CONTAMINANTS SUCH AS VOCs, ONCE EVERY FIFTEEN MONTHS. CONTAMINANT CONCENTRATION MUST BE BELOW THE MCLS REGULATED BY THE MDH FOR MUNICIPAL PUBLIC WATER SUPPLIES.

ALL ARARS ARE EXPECTED TO BE MET WITH ALTERNATIVE 3. THE ALTERNATIVE WOULD REQUIRE THE CONSTRUCTION OF TWO WELLS AND A WATER DISTRIBUTION SYSTEM. THE WELLS WOULD HAVE TO BE CONSTRUCTED IN THE PRESENT WELL CONSTRUCTION ADVISORY AREA ESTABLISHED BY THE MDH IN 1985. THE WELLS WOULD BE ALLOWED TO BE CONSTRUCTED PROVIDED THEY MEET CERTAIN DESIGN CRITERIA SUCH AS DOUBLE CASING. CONSTRUCTION PLANS ARE REQUIRED TO BE REVIEWED AND APPROVED BY THE MDH. SAMPLING AND ANALYSIS OF THE WELL WATER WOULD BE REQUIRED UPON COMPLETION OF WELL CONSTRUCTION AND THEN AT A MINIMUM OF ONCE EVERY THREE YEARS. ANALYSIS WOULD BE FOR THE SAME COMPOUNDS AS THE CITY'S MUNICIPAL SYSTEM IN ALTERNATIVE 2. PROPER CONSTRUCTION OF THE WELLS WOULD BE REGULATED BY THE DAKOTA COUNTY PUBLIC HEALTH DEPARTMENT AS PER THE MINNESOTA WATER

WELL CONSTRUCTION CODE AND DAKOTA COUNTY WELL CONSTRUCTION AND ABANDONMENT ORDINANCE NO. 113. THE CONSTRUCTION OF THE DISTRIBUTION SYSTEM AND THE CONNECTION TO THE BUILDINGS WOULD BE REGULATED BY THE MINNESOTA PLUMBING CODE AND ANY OTHER LOCAL OR STATE PLUMBING LAW, ORDINANCE, RULE OR REGULATION THAT IS ENFORCED BY THE CITY.

ONCE THE ALTERNATE WATER SYSTEM IN ALTERNATIVE 2 OR 3 IS CONSTRUCTED, THE MINNESOTA PLUMBING CODE, SECTION 4715.0310, GIVES THE CITY THE AUTHORITY TO REQUIRE CONNECTION TO THE SYSTEM BY RESIDENTS AND BUSINESSES IN THE IMPACTED AREA AND THE PERMANENT SEALING OF THE PRIVATE WELLS SERVING THE PROPERTIES BY A STATE LICENSED WATER WELL CONTRACTOR. THE CITY HAS NOT USED THIS AUTHORITY IN THE PAST AND HAS STATED THAT IT WILL NOT USE THIS AUTHORITY IN THIS PARTICULAR SITUATION.

LONG-TERM EFFECTIVENESS AND PERMANENCE.

BOTH ALTERNATIVES 2 AND 3 WOULD BE PROTECTIVE OF HUMAN HEALTH DUE TO THE SYSTEM DISTRIBUTING WATER FROM AN UNCONTAMINATED SOURCE THAT WOULD BE CHEMICALLY MONITORED BY THE MDH ON A REGULAR BASIS. EITHER ALTERNATIVE WILL PROVIDE A PERMANENT SOLUTION TO THE DRILLING WATER PROBLEM. HOWEVER, NEITHER ADDRESSES THE ACTUAL CONTAMINATION IN THE GROUND WATER. THE GROUND WATER CONTAMINATION WILL BE ADDRESSED BY OU #2 AND OU #3.

REDUCTION OF TOXICITY, MOBILITY, OR VOLUME.

THE WATER SOURCE FOR ALTERNATIVES 2 AND 3 WILL BE THE CITY'S MUNICIPAL WELLS AND TWO DEEP, DOUBLE CASED BEDROCK WELLS, RESPECTIVELY. THE ALTERNATE SOURCES WILL ELIMINATE THE USE OF THE SHALLOW GROUNDWATER IN THE IMPACTED AREA AS A POTABLE WATER SUPPLY. THE ALTERNATIVES DO NOT REDUCE THE TOXICITY, MOBILITY, OR VOLUME OF THE CONTAMINANTS. HOWEVER OU #2 AND #3 WILL ADDRESS THESE ISSUES.

SHORT-TERM EFFECTIVENESS

IT IS ANTICIPATED THAT THE IMPLEMENTATION OF ALTERNATIVES 2 AND 3 CAN OCCUR WITHIN ONE CONSTRUCTION SEASON. THE INSTALLATION OF THE DISTRIBUTION SYSTEM WILL CREATE DUST, INCONVENIENCE DUE TO POSSIBLE AUTOMOBILE TRAFFIC DELAYS BECAUSE OF THE INSTALLATION OF THE SYSTEM ALONG ROADWAYS, AND MAY REQUIRE RESODDING DUE TO THE INSTALLATION OF THE WATER LINES UNDER LAWNS. NO SHORT-TERM ENVIRONMENTAL OR HEALTH EFFECTS ARE FORESEEN. THE ACTION WILL TAKE PLACE ENTIRELY OFF-SITE, WITH NO POTENTIAL FOR A CONTAMINATION RELEASE FROM THE SITE. THE WATER DISTRIBUTION LINE IS NOT EXPECTED TO TRANSVERSE ANY WETLAND OR OTHER SENSITIVE ECOSYSTEM.

IMPLEMENTABILITY

ALTERNATIVE 2 OFFERS ADVANTAGES OVER ALTERNATIVE 3 IN TERMS OF TECHNICAL FEASIBILITY. ALTERNATIVE 2 IS AN EXTENSION OF AN EXISTING WATER DISTRIBUTION SYSTEM, THEREFORE, THE ENGINEERING DESIGN MAY BE MORE SIMPLIFIED. ALTERNATIVE 3 REQUIRES DESIGN OF A NEW SYSTEM, INCLUDING NEW WELLS AND A DISTRIBUTION SYSTEM. BOTH ARE PROVEN TECHNOLOGIES THAT ARE FEASIBLE. ALTERNATIVE 2 PRESENTS POTENTIAL ADMINISTRATIVE PROBLEMS BECAUSE APPROVAL BY THE CITY OF INVER GROVE HEIGHTS CITY COUNCIL IS NECESSARY. THE SERVICES AND MATERIALS NECESSARY TO CONSTRUCT ALTERNATIVE 2 AND 3 ARE READILY AVAILABLE. IT IS IMPERATIVE THAT ALL ACTIVITIES BE OVERSEEN BY THE CITY ENGINEER.

COST

	ALTERNATIVE 2	ALTERNATIVE 3
CAPITAL COST:	\$2,131,000	\$ 900,500
ANNUAL O&M COST:	\$ 30,350	\$ 16,539
ESTIMATED PRESENT WORTH:	\$2,649,499	\$1,183,052

SUPPORT AGENCY ACCEPTANCE

THE US EPA BELIEVES THAT ALTERNATIVE 2 - EXTENSION OF THE CITY'S EXISTING MUNICIPAL WATER SUPPLY - PRESENTS THE BEST BALANCE AMONG THE NINE EVALUATION CRITERIA. IT IS US EPA, REGION V, POLICY TO ENCOURAGE EXTENSION OF EXISTING WATER SUPPLIES OVER CREATION OF NEW ONES FOR SUPERFUND REMEDIATION.

COMMUNITY ACCEPTANCE

THE PUBLIC GENERALLY ACCEPTED ALTERNATIVE 2, BECAUSE THEY FELT MORE CONFIDENT WITH THE CITY OWNING AND OPERATING THE ALTERNATE SYSTEM, THEY WERE APPREHENSIVE ABOUT THE LOCATION OF THE TWO WATER SUPPLY WELLS PROPOSED IN ALTERNATIVE 3 BEING IN CLOSE PROXIMITY TO THE SITE, AND FELT THAT THE CITY'S SYSTEM WOULD PRODUCE WATER OF BETTER QUALITY THAN WATER PROVIDED BY ALTERNATIVE 3. HOWEVER, THEY EXPRESSED SOME CONCERNS REGARDING THE PAYMENT OF WATER BILLS AS PROPOSED IN ALTERNATIVE 2. SEE THE ATTACHED RESPONSIVENESS SUMMARY FOR A DETAILED DISCUSSION OF COMMENT RECEIVED.

#SR

IX. THE SELECTED REMEDY

THE SELECTED REMEDY TO PROVIDE A PERMANENT, ALTERNATE WATER SUPPLY IS ALTERNATIVE 2, THE EXTENSION OF THE EXISTING CITY OF INVER GROVE HEIGHTS MUNICIPAL WATER SUPPLY INTO THE IMPACTED AREA.

THE GOAL OF THE REMEDIAL ACTION IS TO PROVIDE RESIDENTS AND BUSINESSES, WHO POSSESS WATER SUPPLY WELLS LOCATED DOWN GRADIENT OF THE SITE SCREENED IN THE SURFICIAL AQUIFER, WITH A SAFE, PERMANENT, ALTERNATE WATER SUPPLY. THE PRIVATE WELLS THAT THIS REMEDIAL ACTION WILL REPLACE MUST BE PERMANENTLY SEALED IN ORDER FOR THIS REMEDY TO BE EFFECTIVE.

ALTERNATIVE 2 WILL INVOLVE THE EXTENSION OF AN EXISTING MUNICIPAL WATER SYSTEM INTO THE IMPACTED AREA IN A LOOPED SYSTEM FASHION, AND THE CONNECTION OF SEVENTEEN HOMES AND BUSINESSES TO THE SYSTEM. THE SYSTEM WILL CONTAIN A BOOSTER PUMP WHICH WILL AID IN CIRCULATING WATER THROUGH THE LOOPED SYSTEM MORE QUICKLY THAN WOULD OTHERWISE OCCUR WITH NORMAL WATER USE, THEREBY, DECREASING THE HOLDING TIME OF THE WATER WITHIN THE LOOP. THIS WILL MAINTAIN WATER QUALITY WITHIN THE LOOPED EXTENSION.

THE RPS OF THE SITE WILL CONSTRUCT THE EXTENSION, CONNECT THE RESIDENTS HOMES/BUSINESSES TO THE SYSTEM, RELANDSCAPE LAWNS, ETC., AND PERMANENTLY SEAL THE PRIVATE WELLS THAT WILL BE TAKEN OUT OF SERVICE BY THIS EXTENSION. WATER USE BY THE RESIDENTS/BUSINESSES CONNECTED TO THE SYSTEM WILL BE METERED BY THE CITY. THE ISSUE OF WHETHER WATER BILLS WILL BE THE RESPONSIBILITY OF THE PROPERTY OWNERS OR THE RPS OF THE SITE HAS NOT BEEN RESOLVED. THE CITY WOULD OWN, OPERATE AND MAINTAIN THE EXTENSION.

AT THE PRESENT TIME, WATER TREATMENT BY THE CITY CONSISTS OF THE ADDITION OF CHLORINE, FLUORIDE, AND SODIUM SILICATE WHICH PREVENTS THE PRECIPITATION OF MINERALS FROM THE WATER IN THE WATER LINES. THE CITY IS CONSIDERING THE CONSTRUCTION OF A WATER TREATMENT FACILITY WHICH WILL REMOVE THE MAJORITY OF MINERALS FOUND IN THE CITY'S WATER SUPPLY.

PRESENTLY, MDH REQUIRES THE SAMPLING AND ANALYSIS OF THE CITY'S WATER SUPPLY SYSTEM FOR BACTERIA A MINIMUM OF TWELVE TIMES PER YEAR. MDH REQUIRES SAMPLING AND ANALYSIS OF THE CITY'S WATER SYSTEM FOR OTHER COMPOUNDS SUCH AS VOCs, ONCE EVERY FIFTEEN MONTHS. COMPOUND CONCENTRATIONS MUST BE BELOW THE MCLs REGULATED BY THE MDH FOR MUNICIPAL PUBLIC WATER SUPPLIES. THE CONSTRUCTION OF THE DISTRIBUTION SYSTEM AND THE CONNECTION TO THE BUILDINGS COULD BE REGULATED BY THE MINNESOTA PLUMBING CODE AND ANY OTHER LOCAL OR STATE PLUMBING LAW, ORDINANCE, RULE OR REGULATION THAT IS ENFORCED BY THE CITY.

THE ASSOCIATED COSTS FOR ALTERNATIVE 2 ARE SHOWN IN ATTACHMENTS 11 AND 12.

#SD

X. STATUTORY DETERMINATION

THE IMPLEMENTATION OF ALTERNATIVE 2 AT THE SITE SATISFIES THE REQUIREMENTS OF SECTION 121 (A TO E) OF CERCLA AS DETAILED BELOW.

PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

IMPLEMENTATION OF THE SELECTED ALTERNATIVE, AND THE SUBSEQUENT SEALING OF THE PRIVATE WELLS THAT WILL BE REPLACED BY THE ALTERNATIVE, WILL ELIMINATE THE POTENTIAL RISKS TO HUMAN HEALTH POSED BY EXPOSURE TO CONTAMINATED GROUND WATER THROUGH INGESTION, INHALATION, AND DERMAL CONTACT. THE REMEDY FOR THIS OPERABLE UNIT IS NOT INTENDED TO ADDRESS PROTECTION OF THE ENVIRONMENT. OPERABLE UNITS 2 AND 3 WILL ADDRESS THE RELEASE OF CONTAMINANTS FROM THE SITE AND WILL BE PROTECTIVE OF THE ENVIRONMENT.

ATTAINMENT OF APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS.

ARARS ARE EXPECTED TO BE MET WITH ALTERNATIVE 2. ARARS WILL BE ASSOCIATED WITH MEETING THE APPLICABLE REQUIREMENTS OF THE SAFE DRINKING WATER ACT IN THE FORM OF STATE DRINKING WATER STANDARDS, OR MCLS.

PRESENTLY, MDH REQUIRES THE SAMPLING AND ANALYSIS OF THE CITY'S WATER SUPPLY SYSTEM FOR BACTERIA A MINIMUM OF TWELVE TIMES PER YEAR. MDH REQUIRES SAMPLING AND ANALYSIS OF THE CITY'S WATER SYSTEM FOR OTHER COMPOUNDS SUCH AS VOCs, ONCE EVERY FIFTEEN MONTHS. COMPOUND CONCENTRATIONS MUST BE BELOW THE MCLS REGULATED BY THE MDH FOR MUNICIPAL PUBLIC WATER SUPPLIES.

COST EFFECTIVENESS

ALTHOUGH THE CAPITAL AND OPERATIONAL COSTS OF THE ALTERNATIVE 2 EXCEED THE COSTS OF ALTERNATIVE 3, ALTERNATIVE 2 WILL MORE EFFECTIVELY SUPPLY A POTABLE WATER SUPPLY TO THE AREA. THE LOWER COSTS ASSOCIATED WITH ALTERNATIVE 3 ARE DUE TO THE DOWNSIZING OF THE WATERMAINS, THE SMALLER OVERALL SIZE OF THE SYSTEM, AND THE ELIMINATION OF WATERMAIN LOOPING.

UTILIZATION OF PERMANENT SOLUTIONS

THE MPCA AND THE US EPA BELIEVE THAT THE SELECTED REMEDY REPRESENTS A PERMANENT SOLUTION TO PROVIDE AN ALTERNATE WATER SUPPLY TO THE AREA DOWNGRADIENT OF THE SITE. BOTTLED WATER, IN USE AT THE PRESENT TIME, WILL BE ELIMINATED. THE MUNICIPAL SYSTEM WILL BE IN OPERATION FOR AS LONG AS THE CITY EXISTS. THE SELECTED ALTERNATIVE DOES NOT ADDRESS THE ACTUAL CONTAMINATION IN THE GROUND WATER. THE GROUND WATER CONTAMINATION WILL BE ADDRESSED BY OU #2 AND OU #3.

THE SELECTED ALTERNATIVE - EXTENSION OF MUNICIPAL WATER INTO THE IMPACTED AREA - REPRESENTS THE BEST BALANCE AMONG THE EVALUATION CRITERIA USED TO - EVALUATE THE REMEDIES. BASED UPON THE INFORMATION AVAILABLE, THE MPCA AND THE US EPA BELIEVE THE SELECTED ALTERNATIVE WOULD BE COST-EFFECTIVE, PROTECTIVE OF PUBLIC HEALTH, IMPLEMENTABLE, PERMANENT AND COMPLY WITH ARARS.